

Remarks

Claims 1-3, 5-28 and 32-37 are pending in this application. Claims 1-3, 5-10 and 32-35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Szeliski et al., U.S. patent no. 6,157,747 in view of Luken, U.S. patent no. 5,923,334. Claims 13-21 and 37 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Szeliski et al., U.S. patent no. 6,157,747, in view of Blank, U.S. patent no. 5,469,536. Claims 11-12, 22-28 and 36 stand rejected under 35 U.S.C. 102(b) as being anticipated by Szeliski et al., U.S. patent no. 6,157,747.

A request for continued examination is filed herewith.

Applicant thanks the Examiner for the opportunity for a telephonic interview held between Applicant's attorney, John Conway and the Examiner on April 3, 2007. During the interview, the teachings of the Szeliski reference were discussed along with the differences between Szeliski's method and the method of the present application. The examiner indicated that while the methods were different, these differences must be reflected clearly in the claims for the claims to be allowable. No agreements were reached during the interview.

Claims 1, 11, 22, 32, and 36 have been amended to further define aspects of the invention. In particular, limitations were added to make clear that creating a three-dimensional model of a scene with an object or feature includes identifying an object or feature and associating geometric information

with that object or feature including 3-D coordinates describing position and orientation of the object or feature within a reference coordinate system.

Support for the amendments is provided at least by paragraphs 99 through 103 and figs. 28 through 33 of the present application.

The rejections for anticipation by Szeliski '747 or for obviousness over Szeliski '747 in view of Luken '334 or Blank '536 must fail because neither Szeliski nor Luken nor Blake teaches, discloses or suggests a required claim limitation that is common to the pending claims, as amended. That is, neither Szeliski nor Luken nor Blake teaches, discloses or suggests creating a 3D model of a scene comprising geometry information describing one or more objects or features contained in the scene where creating the model includes identifying an object or feature and associating geometric information with that object or feature including 3-D coordinates describing position and orientation of the object or feature within a reference coordinate system. Details are provided below.

Claim Rejections – 35 U.S.C § 103(a)

The rejection of Claims 1-3, 5-10 and 32-35, as amended, under 35 U.S.C. 103(a) as being unpatentable over Szeliski et al., U.S. patent no. 6,157,747 in view of Luken, U.S. patent no. 5,923,334 lacks a prima facie case.

Szeliski '747 discloses a method for aligning a plurality of images to construct a mosaic image. (See, Szeliski, abstract). Once the images are aligned and pieced together into a mosaic, the image can be viewed. (See,

Szeliski, col. 5, lines 7-23). Szeliski teaches that this viewing can be performed using standard 3D rendering hardware with the mosaic image mapped onto a geometric construct, such as a polyhedron surrounding the origin. (See, Szeliski, col. 5, lines 24-27.) However, Szeliski does not teach, disclose or suggest creating a 3-D model of a scene where the 3D model of the scene contains geometry information about any object in the scene, including 3-D coordinates describing position and orientation about a selected object. Szeliski's mosaiced image is constructed from a series of images that have been aligned. (See, Szeliski, col. 4, lines 8-30). While features in the images are used to help align the images prior to constructing the mosaiced image, Szeliski's method does not identify features or objects in the mosaiced image – this image consists merely of a collection of pixels without features or objects identified. This collection of pixels can be viewed, when the mosaiced image is mapped onto a geometric construct, but Szeliski's method does not identify objects or features within this mapped image (See, e.g., col. 5, lines 7-35). Because Szeliski's method does not identify objects or features in the mosaiced image, geometry information including 3-D coordinates describing position and orientation about these as yet unidentified objects is not attached to any data structure that the method creates.

Claim 1, as amended, requires in part:

“...creating a three dimensional model of the visual scene from the transformed and aligned image panoramas using the reference coordinate system, wherein creating a three dimensional model includes identifying a

selected object in the transformed and aligned image panoramas and associating geometry information with the selected object, the geometry information comprising 3-D coordinates describing the position and orientation of the selected object in the reference coordinate system.”

Because the output of Szeliski’s method does not contain geometry information about any identified objects contained in the mosaiced scene including 3-D coordinates describing the position and orientation of any selected object in the reference coordinate system, Szeliski’s method does not teach the cited limitation of Claim 1.

Similarly, Luken ‘334 generates an environment map from an image representing a panoramic scene. A view of the environment map is then generated. (See, Luken ‘334, abstract; col. 3, lines 10-55.) Luken ‘334, like Szeliski ‘747, does not teach, disclose or suggest creating a 3-D model of a scene where the model contains geometry information about any object or feature in the scene. Luken’s method’s output is wholly pixel based – an environment map – and does not identify any object or feature within the scene or associate 3-D coordinate information with any object or feature within the scene.

Because the output of Luken’s method does not contain geometry information about any objects or features contained in the scene including 3-D coordinate information describing position and orientation of any selected object or feature, Luken’s method does not teach the above-cited limitation of Claim 1.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (See, e.g., MPEP 2143.03). Because the above-cited limitation of Claim 1 is not taught by either Szeliski '747 or by Luken '334, a prima facie case of obviousness has not been made for Claim 1. Thus, Claim 1 is deemed non-obvious over any combination of these two references. Claims 2-3 and 5-10 depend from Claim 1 and add further limitations. These claims are deemed non-obvious over Szeliski '747 and Luken '334 for at least the same reasons as for Claim 1.

Claim 32, as amended, is deemed non-obvious over Szeliski '747 in view of Luken '334 because claim 32 now contains claim limitations analogous to the claim limitations cited above for Claim 1. Claims 33-35, which depend from Claim 32 and add further limitations, are deemed non-obvious over Szeliski '747 in view of Luken '334 for at least the same reasons as for Claim 32.

The rejection of Claims 13-21 and 37 under 35 U.S.C. 103(a) as being unpatentable over Szeliski et al. U.S. patent no. 6,157,747 in view of Blank, U.S. patent no. 5,469,536 lacks a prima facie case.

The rejections of Claims 13-21 and 37 for obviousness rely on Szeliski '747 for teaching the limitations of Claims 11 and 36 from which these claim depend, respectively. As shown below, Szeliski does not teach required limitations of Claims 11 and 36. Further, Blank '536 does not provide the teachings, lacking in Szeliski '747, which are cited below for Claims 11 and 36, respectively. Because Claims 13-21 and 37 depend from Claims 11 and 36,

respectively, and add further limitations, Claims 13-21 and 37 are deemed non-obvious over Szeliski '747 in view of Blank '536.

Claim Rejections – 35 U.S.C § 102(b)

The rejection of Claims 11, 12, 22-28 and 36 under 35 U.S.C. §102(b) as anticipated by Szeliski et al., U.S. patent no. 6,157,747, must fail because Szeliski '747 does not teach each limitation of these claims.

Claims 11, 12, 22-28 and 36 stand rejected under 35 U.S.C. §102(b) as being anticipated by Szeliski et al. U.S. patent no. 6,157,747.

Claim 11, as amended, requires in part:

“...creating a three dimensional model of the visual scene using features of the visual scene and the point source including identifying a selected object in the image panorama and associating geometry information with the selected object, the geometry information comprising 3-D coordinates describing the position and orientation of the selected object in a reference coordinate system; receiving an edit to the selected object in the panorama; transforming the edit relative to a viewpoint defined by the point source; and projecting the transformed edit onto the selected object.”

As shown above with respect to a similar limitation in Claim 1, Szeliski '747 does not teach, disclose or suggest creating a 3-D model of a scene where the model contains geometry information including 3-D coordinates describing the position and orientation of a selected object in the reference coordinate system. Thus, Szeliski's method does not teach the cited limitation of Claim 11

about any object in the scene. Szeliski's mosaiced image is a collection of pixels. This collection of pixels can be viewed, but no objects within this collection of pixels in the mosaiced image are identified by Szeliski's method, either before or after the mosaiced image is mapped onto a geometric construct. Because objects are not identified in Szeliski's method after the mosaiced image is created, 3-D coordinates are not and cannot be associated with any object or feature in the mosaiced image, an edit is not received relative to one or more objects in the scene and a transformed edit is not projected onto the objects. Because Szeliski '747 does not teach these required limitations of Claim 11, Szeliski '747 cannot anticipate Claim 11. Claim 12 which depends from Claim 11 and adds further limitations is deemed not anticipated by Szeliski '747 for at least the same reasons as for Claim 11.

Claim 22, as amended, requires:

"A method for projecting texture information onto a geometric feature within an image panorama, the method comprising: receiving instructions from a user identifying a three-dimensional geometric surface within an image panorama, the image panorama containing features having one or more textures; determining a directional vector from the three-dimensional geometric surface; creating a geometric model of the image panorama based at least in part on the three-dimensional geometric surface and the directional vector, wherein creating a geometric model includes associating geometry information with a selected feature, the geometry information comprising 3-D coordinates describing the position and orientation of a selected feature in a reference coordinate system; and applying the one or more textures to the selected feature in the image panorama based on the geometric model.." (emphasis added.)

As shown above with respect to a similar limitation in Claim 1, Szeliski '747 does not teach, disclose or suggest creating a 3-D model of a scene where the model includes geometry information about any geometric feature or object

in the scene. Szeliski's mosaiced image is merely a collection of pixels. This collection of pixels can be viewed, but no features within this collection of pixels are identified by Szeliski's method, after the mosaiced image is mapped onto a geometric construct. Because features are not identified in Szeliski's method in the mosaiced image, Szeliski '747 cannot teach at least the step of Claim 22 emphasized above of "creating a geometric model of the image panorama based at least in part on the three-dimensional geometric surface and the directional vector including associating geometry information with a selected feature, the geometry information comprising 3-D coordinates describing the position and orientation of the selected feature in a reference coordinate system." Because Szeliski '747 does not teach a required limitation of Claim 22, Szeliski '747 cannot anticipate Claim 22. Claims 23-28 which depend from Claim 22 and adds further limitations are deemed not anticipated by Szeliski '747 for at least the same reasons as for Claim 22.

Claim 36 contains limitations analogous to the limitations of Claim 22. Claim 36 is deemed not anticipated by Szeliski '747 for at least the reasons cited for Claim 22.

Applicant requests reconsideration of all pending claims and a notice of allowance. The Examiner is requested to telephone the undersigned if any matters remain outstanding so that they may be resolved expeditiously. The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith to our Deposit Account No. 19-4972.

Respectfully submitted,

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